Cash Control Unit 1.0

Certified Transaction Logging
for Cash Registers in Sweden

User Manual
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Giesecke & Devrient

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Cash Control Unit meets the safety requirements of the relevant EC directives and complies with the EN standards as listed in the CE declaration of conformity.

CE

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About Cash Control Unit

Characteristics

Cash Control Unit records electronic cash register (ECR) transaction data, encrypts and stores it for the Swedish tax authorities. Cash Control Unit is compliant with Swedish Tax Agency regulation SKVFS 2007:592 and certified according to regulation SKVFS 2009:2 Type A.

This manual provides information on product security integrity. For important information on this subject see '1.4 Security Seal' on page 11 and see '1.5 Product Label' on page 13.

Features

Cash Control Unit comprises the following features:

- Type A configuration
- 2 GB internal flash memory
  for at least seven million transactions
- Internal smart card for secure operations
- Interface for SD and SDHC cards
  with FAT16 or FAT32 file systems
- Real time clock
  high-precision, buffered for seven years without power supply
- Adjustable baudrate

Technical Data

Memory	2 GB internal flash memory for a minimum of 7 million transactions
Supply voltage	5 V DC
Power consumption	< 500 mA
Dimensions	115 x 85 x 25 mm
Operating temperature	-5°C to +40°C
Storage temperature (short term)	-15°C to +60°C
Operating humidity	10% to 85% relative humidity

Supported SD Cards

Cash Control Unit can be used with SD and SDHC cards that comply with SD specification 2.0 and have a FAT16 or FAT32 file system. Cash Control Unit has been tested with the following cards:

Brand	Size and Format
Digi Photo Premium	1GB SD 2GB SD
FujiFilm	1GB SD 4GB SDHC
GreenMemory	4GB SDHC 8GB SDHC
Kingston	2GB SD 4GB SDHC
Lexar 3401-512SA, 3705C as FAT16	512MB SD
Panasonic	2GB SD 4GB SDHC
PNY	16GB SDHC
SanDisk AR0630803002D as FAT16 and FAT32	256MB SD
SanDisk Extreme BI0921014348G as FAT32	8GB SDHC
SanDisk Ultra II	2GB SD 4GB SDHC
SanDisk Ultra II BH0911814088G as FAT32	4GB SDHC
Toshiba	4GB SDHC
Transcend	2GB SD 4GB SDHC
Transcend 269549 0170 as FAT32	16GB SDHC
Transcend 8281BB 2G 07881 as FAT32	2GB SD
Transcend MM8GF01GWBCA-MA as FAT32	1GB SD

Related Standards

Cash Control Unit adheres to the following standards:

- SD Specification 2.0
- IEC 721-3-7:7K2
- IEC 721-3-7:7B1
- IEC 721-3-7:7C1L
- IEC 721-3-7:7M1
- IEC 721-3-7:7M2 (drop)

- CE
- EN 55022 Category B
- EN 55024
- EN 60950-1
- RoHS
- WEEE
- Protection class IP41

Delivery Extent

The Cash Control Unit package comprises:

- Cash Control Unit
- Power supply
- RS232 cable
- Protective seal for DIP switches
- User manual

Fig. 1 Delivery extent

About the Document

Target Group

This document addresses service technicians, authorized tax authority officers and cashiers.

Notational Conventions

The following symbols are used in this manual.

Tips give advice about the best way to do something or useful information on special aspects.

Notes comprise hints and recommendations useful when working with Cash Control Unit.

Warnings must be read carefully - they prevent severe malfunctions and loss of data!

1 Understanding Cash Control Unit

This chapter describes the basic principles of Cash Control Unit and provides background information.

1.1 Connections and SD Slot

Connections

Cash Control Unit is a type A configuration with two connections.

USB type B power supply plug Serial port

Fig. 2 Cash Control Unit connections

The USB type B plug serves as power supply only.

The serial port is used to communicate with the ECR via the RS232 cable provided. Communication speed can be set using the DIP switches (see '1.3 DIP Switches' on page 9).

Serial Port Pins

Cash Control Unit is equipped with a 9-pin female serial port:

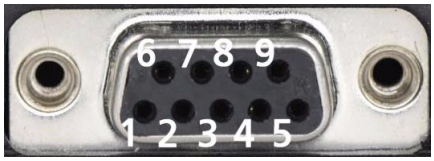

Fig. 3 Serial port with numbered pins

The Cash Control Unit serial port pins are used for the following signals:

Pin	Signal	Direction
1	DCD	outgoing
2	TX	outgoing
3	RX	incoming
4	DSR	incoming

Pin	Signal	Direction
5	GND	ground
6	DTR	outgoing
7	CTS	incoming
8	RTS	outgoing
9	NC not connected	optional 5V power in

SD Slot

Below the LEDs, Cash Control Unit provides an SD slot for transferring data to a storage card.

Fig. 4 SD slot

The SD slot is always covered by a seal to prevent tampering. For more information on seal placement and how to insert the SD card see '2.2 Transferring Data' on page 18.

1.2 LEDs

Scope

The three LEDs on the top of Cash Control Unit and their colors are shown below:

Fig. 5 LEDs with colors

Operating States

The LEDs indicate the following operating states:

State	ON Green	DATA Yellow	ERROR Red
Normal operation	on	off	off
Data transfer to SD	on	blinking	off
Data transfer to SD completed	on	on	off
SD card removed after transfer completed, ie, normal operation	on	off	off
Startup and initialization, ie, normal operation	blinking	off	off

Error States

The LEDs indicate the following error states:

State	ON Green	DATA Yellow	ERROR Red
Transfer error SD removed or power shut off before completion, or SD full	on	blinking	blinking
Other technical problem	on	off	on
Internal flash memory full	off	off	blinking
Internal counter overflow	on	on	blinking
Smart-card error	off	off	on

1.3 DIP Switches

Scope

On the front of Cash Control Unit there are eight DIP switches numbered 1 through 8.

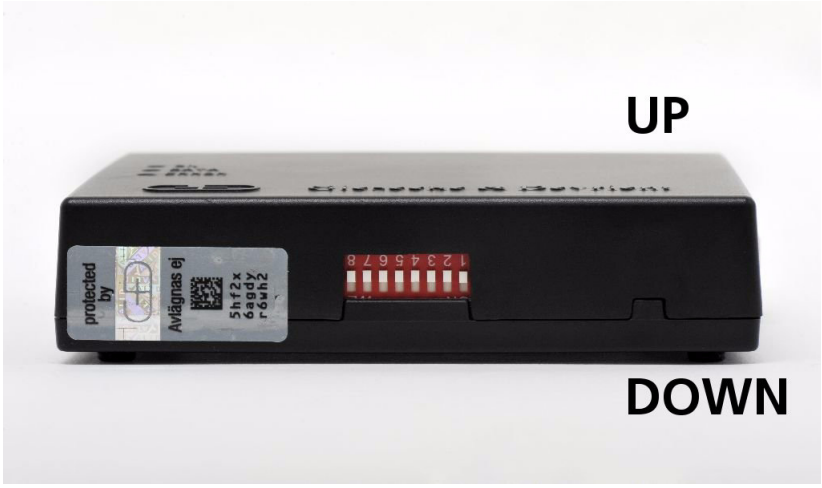

Fig. 6 DIP switches and labels indicating switch direction

Only DIP switches 1 and 2 are used in this configuration of Cash Control Unit.

In the following table UP means towards the top of Cash Control Unit and DOWN means towards the bottom of Cash Control Unit as indicated in the figure above. In the figure above all switches are UP, ie, in the default position.

DIP Switch Settings

Set switches 1 and 2 for desired communication speed as follows:

Communication Speed	Switch 1	Switch 2
9,600 bps	UP	UP
19,200 bps	DOWN	UP
38,400 bps	UP	DOWN
Default setting (9,600 bps)	UP	UP

Seal

The DIP switches should be sealed after being set to prevent accidentally changing the configuration and to prevent any dust or liquids from entering the housing. The figure below shows the protective seal used to cover the DIP switches.

Fig. 7 Protective seal for DIP switches

1.4 Security Seal

Scope

Cash Control Unit is protected from tampering by security seals that are compliant with BSI TL-03415.

The following figure shows the security seal used on Cash Control Unit. Number and barcode will vary.

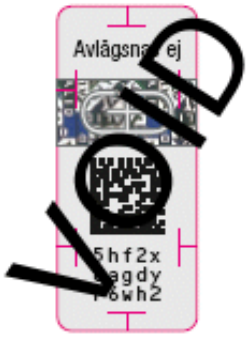

Fig. 8 Cash Control Unit security seal

Do not remove or attempt to remove the seals.

Do not damage Cash Control Unit in any way as this might be interpreted as a tampering attempt.

The seal is destroyed when it is removed. When the seal is peeled back it leaves visible marks on Cash Control Unit.

Any tampering attempts aimed at illicitly detaching a seal; for example, by means of solvents, "undercutting", or exposing Cash Control Unit to temperatures beyond the specified range; are reliably indicated.

Positioning

The following figures show the position of the security seals on Cash Control Unit.

The security seals are found:

- Over the SD slot
- On the front left-hand side of Cash Control Unit
- On the back left-hand side of Cash Control Unit
- On the bottom of Cash Control Unit

Upon close inspection these seals must be intact and untampered with. Special attention must be paid to insure that the seals have not been cut.

Fig. 9 Security seals over SD slot and on the front of Cash Control Unit

Fig. 10 Security seal on the back of Cash Control Unit

Fig. 11 Security seal on the bottom of Cash Control Unit

1.5 Product Label

Scope

Cash Control Unit is certified in accordance with Swedish Tax Agency regulation SKVFS 2009:2.

The serial and certificate numbers, and the certification seal are found on the product label attached to the bottom of Cash Control Unit.

1 Serial number
2 Certification body logo
3 Certificate number

Fig. 12 Product label for Cash Control Unit

2 Working with Cash Control Unit

This chapter describes how to connect and disconnect Cash Control Unit, and how to transfer control data from Cash Control Unit to a tax officer's storage card.

2.1 Connecting and Disconnecting Cash Control Unit

Need to Know

Cash Control Unit should be installed by a technically experienced person.

USB type B power supply plug Serial port

Fig. 13 Cash Control Unit connections

Connecting Cash Control Unit

To connect Cash Control Unit to the electronic cash register

1. Set the DIP switches to the communication speed of the electronic cash register (ECR) (see ' DIP Switch Settings' on page 9).
2. Place a seal over the DIP switches (see ' Seal' on page 10).
3. Connect provided RS232 data cable to Cash Control Unit's serial port and the other end to the ECR.

4. Connect the provided power cable to Cash Control Unit's power supply port.

Fig. 14 Cables connected to Cash Control Unit

5. Wait until the green LED stops blinking. This can take about 30 seconds.
   ↳ Cash Control Unit is ready for use.

Disconnecting Cash Control Unit

Do not disconnect Cash Control Unit from power supply if not necessary.

Make sure no data transfer is in progress before you disconnect Cash Control Unit.

To disconnect Cash Control Unit from the ECR

1. Shut off the electronic cash register to ensure no operations that might affect Cash Control Unit are in progress.
2. Disconnect Cash Control Unit from the power supply.
3. Disconnect the RS232 data cable from the ECR.

2.2 Transferring Data

Need to Know

Only tax officers from the Swedish tax agency are permitted to transfer data and remove the security seals from Cash Control Unit. For more information on the security seals and where they are placed on Cash Control Unit see '1.4 Security Seal' on page 11.

The product label is found on the bottom of Cash Control Unit (see '1.5 Product Label' on page 13).

How to Proceed

No receipts can be processed while data is being transferred from Cash Control Unit.

Fig. 15 Inserting storage card

To transfer data from Cash Control Unit to a storage card

1. Make sure that the electronic cash register (ECR) is no longer processing receipts.
2. Disconnect Cash Control Unit from the power supply.
3. Remove the seal from the card slot.
4. Insert storage card into the SD slot as depicted in the figure above, ie, with contacts facing upwards.
5. Reconnect the power.

   ↳ The green ON LED blinks to indicate startup of Cash Control Unit. This can take about 30 seconds.

   ↳ The yellow DATA LED blinks to indicate data transfer to the storage card (see '1.2 LEDs' on page 8).

6. When data transfer has been completed and the yellow DATA LED has stopped blinking, remove the storage card from the SD slot.
7. Place a new seal over the card slot.

Appendix

The appendix contains additional information on Cash Control Unit and the index.

A Safety and Cleaning

Safety Information

Read the following safety instructions carefully. They have been compiled for your safety and to ensure proper application of Cash Control Unit in accordance with corresponding regulations.

Failure to observe the following general safety instructions can lead to injury of the operator and/or damage of Cash Control Unit. In the event the instructions are not observed, Giesecke & Devrient is exempt from accident liability. This exemption also applies during the warranty period.

Cash Control Unit has been assembled and tested according to the basic safety requirements for low voltage applications (LVD) and has left the manufacturer in flawless condition. To maintain this condition and to ensure safe operation, the operator must not only observe the correct operating conditions for Cash Control Unit but also the following general safety instructions:

- Cash Control Unit must be used as specified in the product documentation.
- Electrical installation of Cash Control Unit must meet Swedish requirements and regulations.
- Only use the power cable that comes with Cash Control Unit. Do not use an extension cable to connect Cash Control Unit.
- Make sure Cash Control Unit is well ventilated.
- Do not place Cash Control Unit close to heat sources or in damp places.
- Do not expose Cash Control Unit to direct sunlight.
- Do not expose Cash Control Unit to liquids.
- Only devices or parts that fulfill the requirements of Safety Extra Low Voltage circuits (SELV) – as stipulated by IEC 60950-1 – may be connected to the available interfaces.
- Cash Control Unit can only be disconnected completely if the power cable is removed from the wall plug or from Cash Control Unit. Make sure there is free and easy access to enable disconnection.
- Only original accessories that have been approved by Giesecke & Devrient may be used.
- Safe operation is no longer possible if any of the following apply.
  - Cash Control Unit is visibly damaged
  - Cash Control Unit is no longer functioning
    In this case, Cash Control Unit must be switched off and it must be ensured that Cash Control Unit can no longer be operated.

Additional safety instructions for DC power supply circuits:

– A sufficient dimensioning of the power cable wires must be selected – according to the maximum electrical specifications on the product label – as stipulated by EN60950-1, VDE0100, EN60204 or UL508 regulations.
– The devices do not generally fulfill the requirements for "centralized DC power systems" (UL 60950-1, Annex NAB; D2) and therefore may not be connected to such devices!

Cleaning Cash Control Unit

Clean Cash Control Unit with a dry cloth.

B Disposal

Environmental Protection

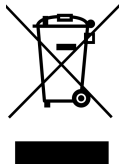

Fig. 16 WEEE symbol

In accordance with the European Directive 2002/96/EC on waste electrical and electronic equipment (WEEE), the following applies:

- Electrical and electronic devices may not be disposed of with domestic waste.
- Consumers are obliged by law to return electrical and electronic devices at the end of their service lives to the public collecting points set up for this purpose or point of sale. Details to this are defined by the national law of the respective country.
- The symbol on the product or package indicates that this product is subject to these regulations.

By recycling, reusing the materials or other forms of utilizing old devices, you are making an important contribution to protecting our environment.

C Glossary

bps
: bits per second
In digital communications systems, the data rate is measured in bps.

CTS
: Clear To Send

DCD
: Data Carrier Detect

DIP
: dual in-line package

DSR
: Data Set Ready

DTR
: Data Terminal Ready

ECR
: electronic cash register

FAT
: File Allocation Table

GND
: Ground

LED
: Light-Emitting Diode

LVD
: Low Voltage Directive

RS232
: Recommended Standard 232
a standard for serial binary data signals

RTS
: Request To Send

RX
: Receive

SD
: Secure Digital
a non-volatile memory card format

SDHC
: Secure Digital High Capacity
an extension of the SD standard which increases card storage capacity up to 32 GB

SELV
: safety extra-low voltage

TX
: Transmit

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